

In the Claims:

1. (Currently amended) An apparatus for performing a process for reducing to metallic form metal oxides, the ~~said~~ metal oxides comprising metal oxides present in spent nuclear fuel, wherein the apparatus comprises: being free from bolted or screwed fittings and comprising

an electrochemical cell which comprises:

a body or housing[[],];

a cathode container[[],]; and

a cathode connector[[],];

wherein said body or housing ~~being~~ is maintained as the cathode, and said electrochemical cell ~~being~~ is free from bolted or screwed fittings ~~or housing is maintained as the cathode.~~

2. (Original) An apparatus as claimed in claim 1 wherein said cathode connector is affixed to an internal surface of the cell.

3. (Original) An apparatus as claimed in claim 2 wherein said cathode connector is affixed to an internal surface of the cell by means of welding.

4. (Currently Amended) An apparatus as claimed in ~~any one of claims 1, 2 or 3~~ claim 1 wherein an electrical connection from the cathode container to the body or housing of the cell is provided by means of a cathode connector.

5. (Original) An apparatus as claimed in claim 4 wherein said electrical connection is provided by means of a press connection.

6. (Currently Amended) An apparatus as claimed in ~~any preceding~~ claim 1 wherein said cathode connector comprises a cathode rail.

7. (Original) An apparatus as claimed in claim 6 wherein said rail is welded to the base of the cell.

8. (Currently Amended) An apparatus as claimed in ~~any preceding~~ claim 1 wherein the cathode container comprises a mesh basket or metal oxide retaining vessel.

9. (Currently Amended) An apparatus as claimed in ~~any preceding~~ claim 1 wherein the cathode container comprises an assembly of cathode containers.

10. (Original) An apparatus as claimed in claim 9 wherein said assembly comprises an assembly of mesh baskets or metal oxide retaining vessels.

11. (Currently Amended) An apparatus as claimed in ~~any preceding~~ claim 1 wherein the electromechanical cell further comprises anode is a carbon anode.

12. (Currently Amended) An apparatus as claimed in ~~any preceding~~ claim 1 wherein the body or housing of the cell is maintained as the cathode by the provision of an electrical connection from a power supply to the body or housing of the cell.

13. (Currently amended) A process for reducing to metallic form metal oxides, said metal oxides comprising metal oxides present in spent nuclear fuel, the process comprising:

cathodically electrolysing the oxide in the presence of a molten salt electrolyte in an apparatus as ~~claimed in any one of claims 1 to 12~~, the apparatus comprising:

an electrochemical cell which comprises:

a body or housing;

a cathode container; and

a cathode connector;

wherein said body or housing is maintained as the cathode, and said electrochemical cell is free from bolted or screwed fittings;

controlling the potential of the cathode ~~being controlled~~ so as to favour oxygen ionisation over deposition of metal from the cations present in the molten salt.

14. (Currently Amended) A process as claimed in claim 13 wherein further comprising:

maintaining the body or housing of the cell ~~is maintained~~ as the cathode ~~and is brought while bringing the body or housing of the cell~~ into contact with the cathode container by means of a press connection between said container and a cathode connector.

15. (Currently Amended) A process as claimed in claim 13 ~~or 14~~ wherein the oxide comprises the oxide of zirconium or hafnium.

16. (Currently amended) A process as claimed in claim 13 ~~claim 13 or 14~~ wherein the oxide comprises ~~an oxide present in spent nuclear fuel~~ an actinide oxide.

17. (Currently amended) A process as claimed in claim 16 wherein the actinide oxide comprises ~~an actinide oxide~~ uranium oxide, irradiated uranium oxide and/or mixed uranium/plutonium oxide fuel pellets.

18. (Currently amended) A process as claimed in claim 17 wherein the ~~actinide~~ uranium oxide comprises uranium dioxide oxide, ~~irradiated uranium oxide or mixed uranium/plutonium oxide fuel pellets~~.

19. (Currently amended) A process as claimed in claim 13 ~~18~~ wherein ~~the uranium oxide comprises uranium dioxide~~ the oxide is located in a mesh basket which forms the cathode.

20. (Currently amended) A process as claimed in ~~any one of claims~~ claim 13 to 19 wherein the ~~oxide is located in a mesh basket which forms the cathode~~ molten salt electrolyte comprises at least one chloride salt.

21. (Currently amended) A process as claimed in ~~any one of claims 13 to~~ claim 20 wherein the ~~molten salt electrolyte comprises at least one chloride salt~~ chloride salt is CaCl_2 or BaCl_2 .

22. (Currently amended) A process as claimed in claim ~~13~~ 24 wherein the ~~chloride salt is CaCl_2 or BaCl_2~~ spent nuclear fuel comprises cladding.

23. (Currently amended) A process as claimed in ~~any one of claims 16 to 22~~ claim 13, further comprising:

~~wherein the fuel is treated together with its cladding~~ removing the cladding from the fuel prior to cathodically electrolysing the oxide and controlling the potential of the cathode.

24. (Currently amended) A process as claimed in ~~any of claims~~ claim 13 to 24 wherein the ~~cladding is removed from the fuel prior to treatment~~ further comprising:
using the metal oxides reduced to metallic form as the feed for an electrorefining process.

25. (Currently amended) A process as claimed in ~~any one of claims 24~~ wherein the ~~metal resulting from the process is used as the feed for an electrorefining process~~ electrorefining process is carried out in a same electrolytic cell as cathodically electrolysing the oxide and controlling the potential of the cathode.

26. (Canceled)